Annual AHRQ Conference 2012:

The Intersection of a PSO and Health IT

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Agenda

- Patient Safety Organization (PSO)
- Overview of Health Information Technology
- Use of a PSO in Collaborative Project (i.e. HIT Hazard Manager)
- Preliminary Data highlights received by ECRI Institute PSO
- Deep Dive using AHRQ Common Format for HIT/Device Adverse Events

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What is a Patient Safety Organization?

Final Rules Implementing the PSQIA

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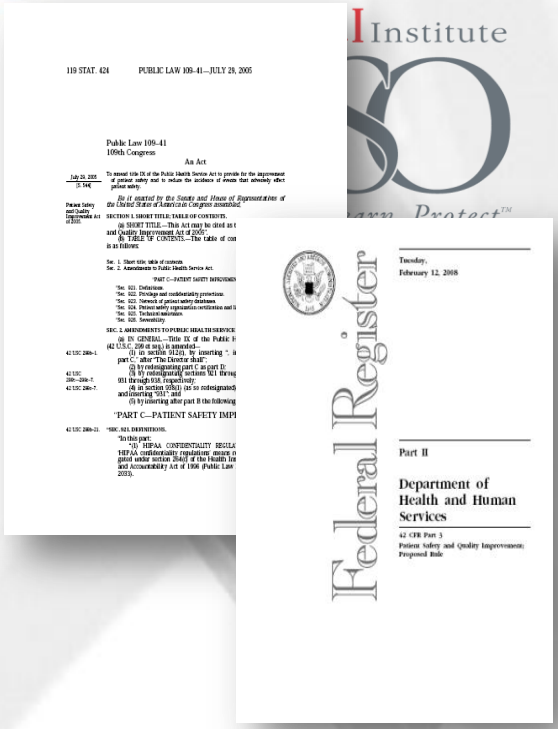
- In Jan 19, 2009, PSQIA of 2005 became effective.
- First-ever national system for healthcare providers to improve safety by voluntarily reporting medical errors and near misses.
- Assurance of confidentiality and protection from legal discovery (not subject to subpoenas, discovery, or admissible in court of law).
- Allows providers to seek expert help in understanding patient safety events and preventing their recurrence in a protected legal environment.

Goals of the Patient Safety and Quality Improvement Act



- Allows the organizations that collect the data, called Patient Safety Organizations (PSOs), to provide analysis and feedback (share findings and lessons learned) in a protected legal environment.
- PSOs can collect information about events using a standardized language, called common formats, developed by AHRQ.

About ECRI Institute PSO

- Component of ECRI Institute
- Independent, not-for-profit applied research institute
- Helping the healthcare community to determine the best ways of delivering care
- Strict conflict of interest rules
- 43-year history, 375 interdisciplinary person staff
  - Evidence-Based Practice Center
  - **Federally listed PSO since 2008 (amongst 1st 10 listed PSOs)**
  - Support over 800 provider organizations
  - Specialty PSO activities (e.g., HIT)

Overview of Health Information Technology

"It is not a single product; it encompasses a technical system of computers and software that operates in the context of a larger sociotechnical system—a collection of hardware and software working in concert within an organization that includes people, processes, and technology."

--IOM "Health IT and Patient Safety: Building Safer Systems for Better Care."

Perpetuating System Issues

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Example: Wrong patient/patient identification

- Nurse noticed the patient's DOB was incorrect on the account. With further investigation, it was discovered that her admission was tied to the patient's deceased spouse's MRI and DOB.
- Care summary showed history of past medical admissions that were not hers, but her deceased husband's.
- Labs were drawn, sent, and transfusion administered under erroneous account.

What Can We Learn from this Incident?

Just being wired (or using health IT)
is not a guarantee of improved patient care.

Background

- While interrelationship between delivery of medical care and IT offer significant benefits, it has raised concerns and potential risks to patients.

- Facilities should not implement HIT without fully understanding the operating environment of their systems.

Background

- Many studies emphasize the unintended consequences of HIT.

  -Ash et al (2004).; Koppel et al (2005)

- The impact can be large because HIT affects so many patients.

  -Sittig and Singh (2011)

- FDA conducted a 2-year study in which 260 reports of medical device malfunctions as a result of IT or software issues were submitted of which 44 resulted in injuries and 6 involved deaths. (U.S. FDA)
- The Joint Commission has also called attention to the safety risks of HIT in a *Sentinel Event Alert* on safely implementing HIT. (Joint Commission)

Background

- The "Other" IOM report: *Health IT and Patient Safety: Building Safer Systems for Better Care*, 2011: no central repository of data about HIT errors.
- Many HIT systems, such as EHRs, fall outside FDA's oversight.
- Individual healthcare organizations are beginning to collect HIT event data through their event reporting systems, but rarely shared due to legal concerns which in turn limits trending.

Background

- HIT vendors may prevent organizations from sharing information with nondisclosure clauses that prohibit users from sharing product information about HIT-related patient safety risks (IOM).

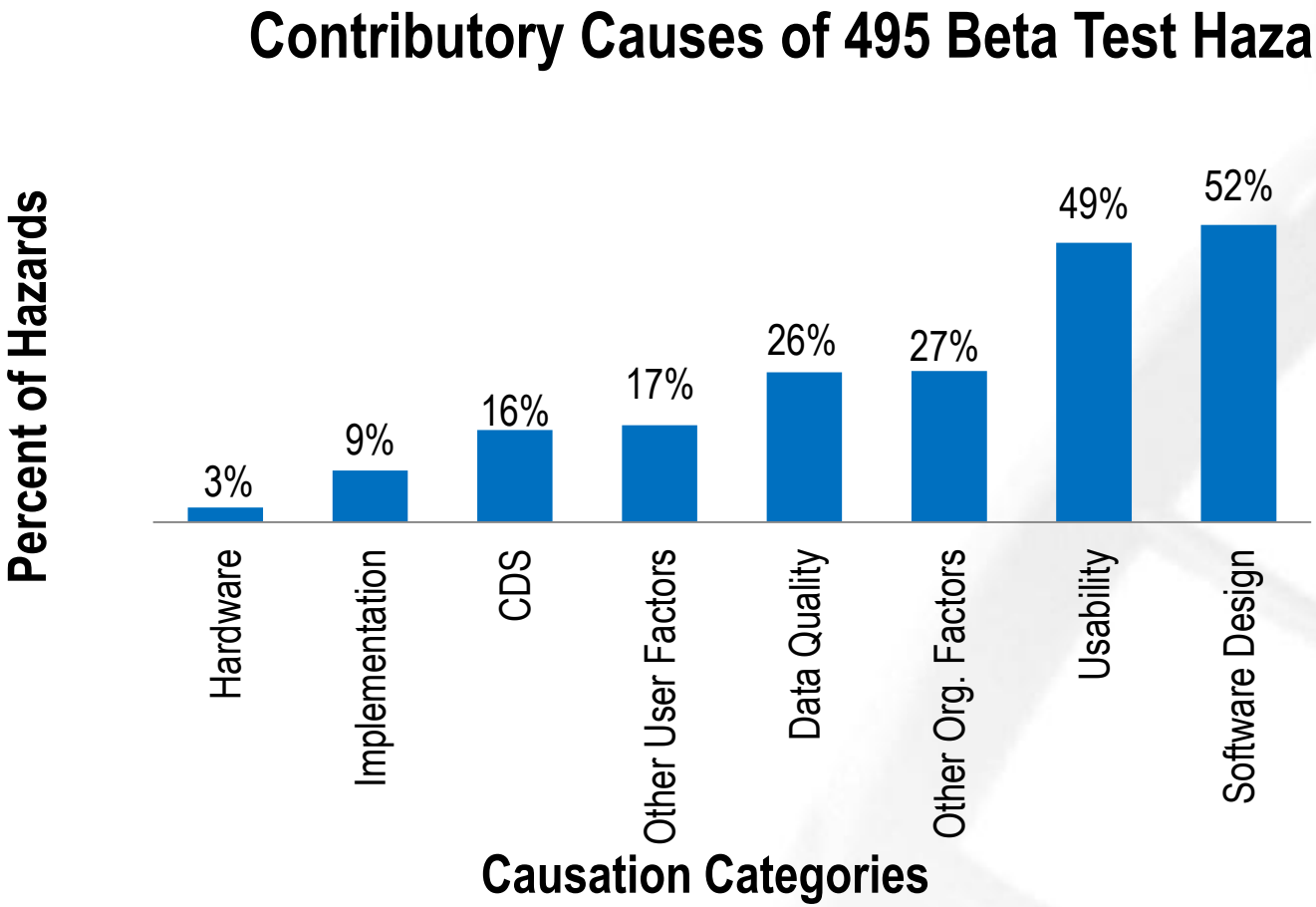
- IOM's report highlights the important role of federally certified patient safety organizations (PSOs) in collecting and sharing data about HIT-related events in a nonthreatening and protected manner.

ECRI Institute PSO's Role In Health IT Error Reporting (The Hazard Manager™)

ECRI Institute PSO's role in collaboration

- Provided PSO Protection for all the study sites who submitted events using The Hazard Manager.
  - The sites signed limited PSO agreements with ECRI for purposes of this study.
  - The protection made it relatively easier to recruit sites.
  - Sites were interested in learning from one another within this protected space.
- Built, programmed, and operated the web-based beta version of The Hazard Manager as a subcontractor to ABT Associates.

Beta Test Findings



Usability and Software Design – frequently both – were common contributors to health IT hazards

Preliminary HIT Data Highlights from ECRI Institute PSO database prior to the use of the HIT/Device Common Formats

ECRI Institute PSO Data

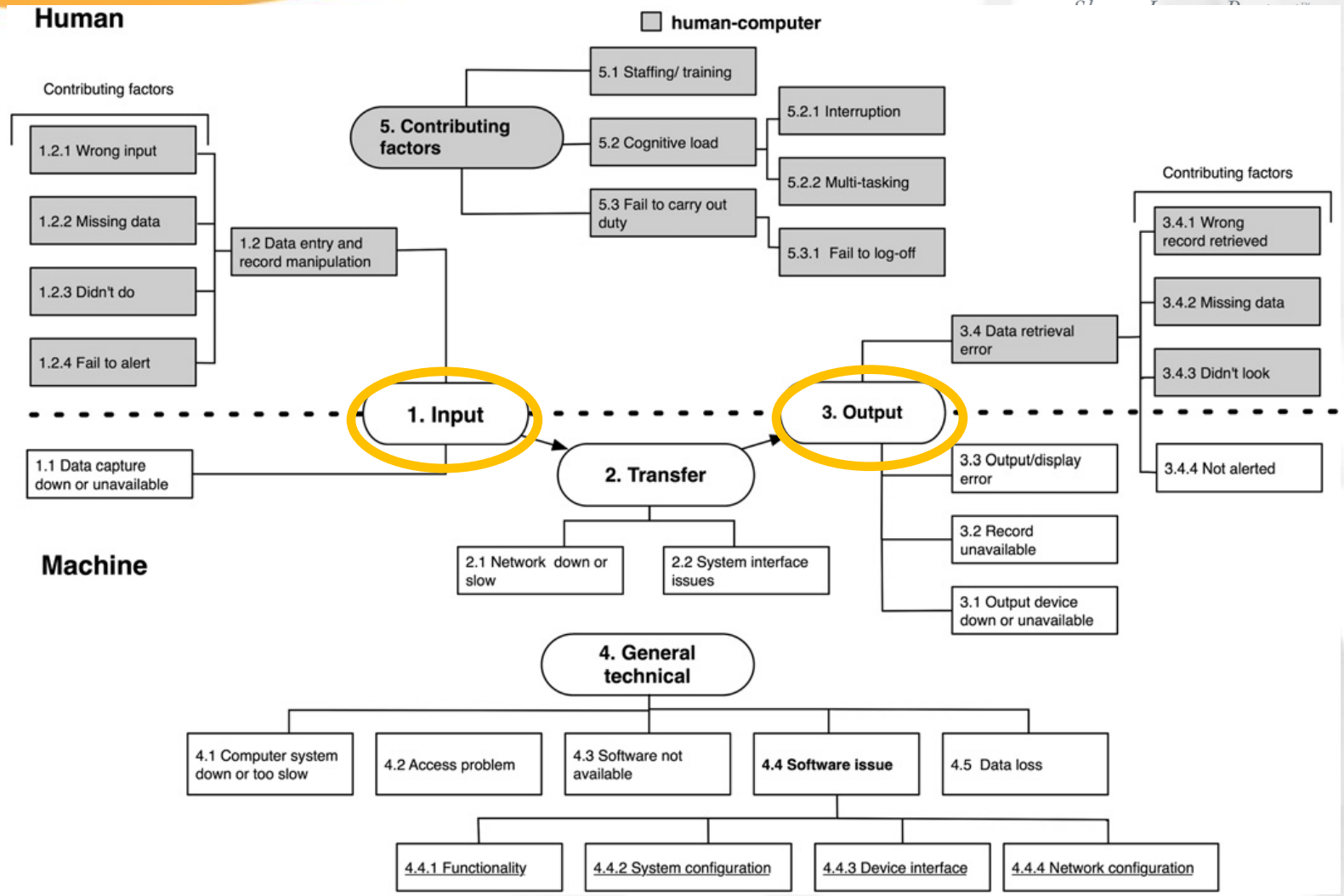
Methodology

- Query of ECRI Institute PSO database performed 11/2009 – 1/2012:
- 1237 potentially HIT-related reports since 11/2009.
- 610 (49%) reports were excluded (eg. ordered right, hand-picked wrong).
- 627 Reports tagged with a Magrabi's published classification system for HIT safety reports which was also used with the FDA MAUDE database.
  - The MAUDE database is--a collection of thousands and thousands of reports of safety-related events involving medical devices--including some--but not all--HIT devices like PACS.

Farah Magrabi, Mei-Sing Ong, William Runciman, Enrico Coiera. Using FDA reports to inform a classification for health information technology safety problems. J Am Med Inform Assoc 2012;19:1 45-53 Published Online First: 8 September 2011 doi:10.1136/amiajnl-2011-000369

ECRI Institute PSO Data

Tagging Methodology



Source: Magrabi F, Ong MS, Runciman W, Coiera E. Using FDA reports to inform a classification for health information technology safety problems. J Am Med Inform Assoc. 2012;19:45-53.

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ECRI Institute PSO Data

- Near miss (24%) and Incident (76%) reports related to HIT and technology use.
- A number of reports related to:
  - Intersection of human factors and health care information technology
  - Inadequate system interfaces
  - Software anomalies
  - Inattention to change management.
  - Human errors (such as input errors)
  - Errors related to the design of the system or a combination.

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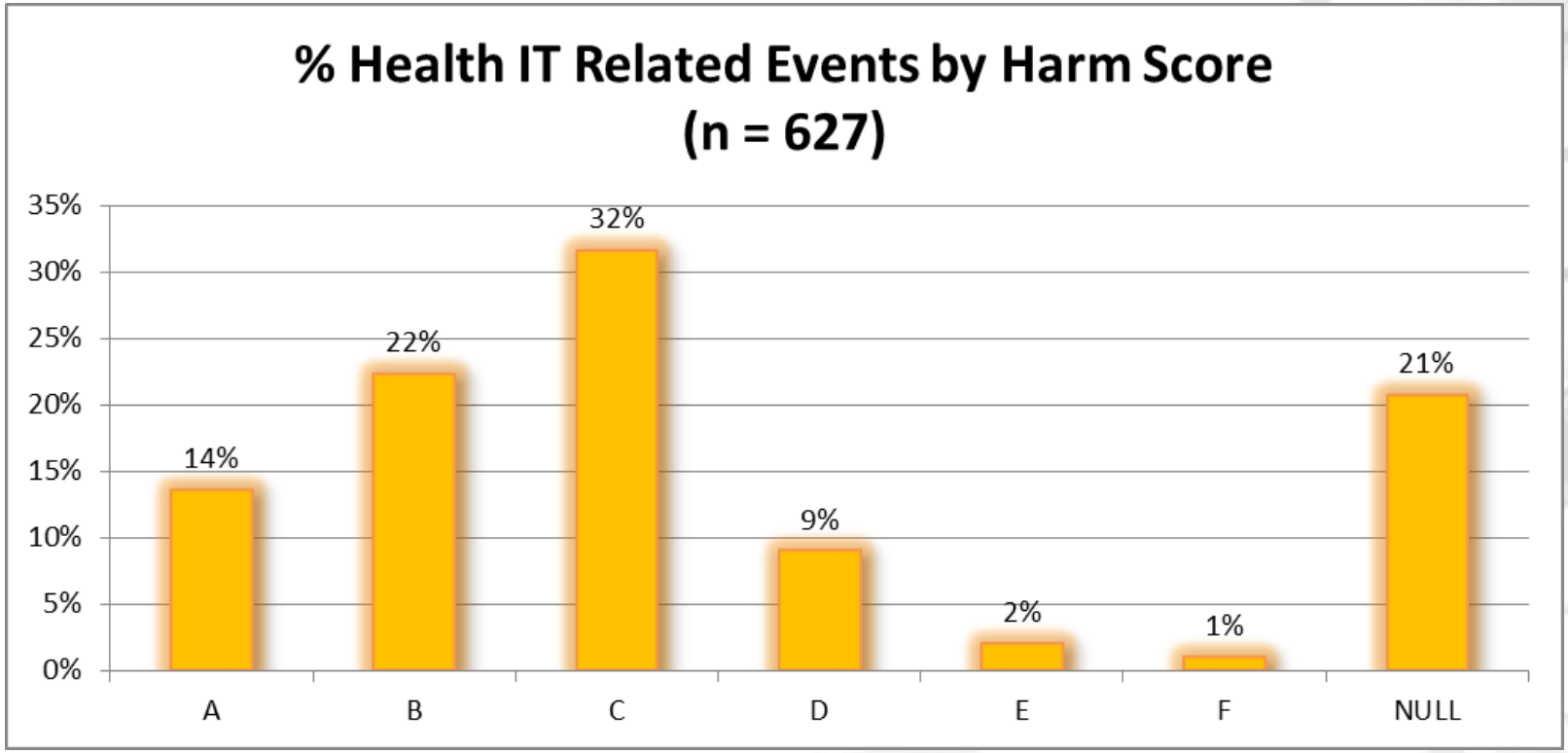
HIT Related Events by Event Type - AHRQ Taxonomy 1.1
(n = 627)

	Event Type	#	%
	Medication or Other Substance	250	40%
*	Laboratory Test/Radiology	193	31%
*	Other Event	150	24%
	Healthcare-Associated Infection (HAI)	17	3%
	Blood or Blood Products	9	1%
	Device or Medical/Surgical Supply/HIT	4	1%
	Surgery or Anesthesia	2	0%
	Fall	1	0%
	Perinatal	1	0%

*ECRI-enhanced event types

ECRI Institute PSO Data



- National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP) Harm score

ECRI Institute PSO Data

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Top 5 Health IT Safety Problems

Classification	#
1.2.1 Wrong input	245
1.2.3 Didn't do	158
3.3 Output/display error	149
3.4.1 Wrong record retrieved	92
3.4.2 Missing data	65

Human - Computer

Preliminary Data highlights from ECRI Institute PSO Deep Dive™ on HIT Using AHRQ's Common Formats

Deep Dive™ Overview

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- Hazard Manager captures additional information—IT Vendors as well as implementation teams; and non-human issues.
- The AHRQ Common Formats version 1.1
  - HIT data was seen throughout all the event types
  - Many of the technology issues were not captured but mostly human-interface
  - Focused on issues at the point of patient care only
- Common formats version 1.2 HIT/Device Forms
  - Issues are still focused more at point of care
  - Incorporated more of the human and technology issues that were missed

Deep Dive™ Overview

- This deep dive is a snap shot.
- Combine focused collection of data with our previous knowledge from earlier reports, we hope to provide focused guidance to address some of these areas.
  - Example: issues regarding the display of information on computer screens; information gets cut off or important information does not show up in the display.

Deep Dive™ Overview

- Last year, the IOM identified the need for more shared learning about events related to the adoption HIT and noted this learning can occur under the protections of PSOs.
- ECRI PSO Deep Dive fosters that shared learning to ensure that healthcare organizations realize the benefits of HIT without jeopardizing patient safety.

Deep Dive™ Overview

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Methodology

- Query of ECRI Institute PSO database performed using HIT Taxonomy.
- 199 HIT implicated reports since from 4/16/2012 to 6/19/2012.
- 28 (14%) reports were excluded.
- 171 (86%) reports tagged using a Magrabi's published classification system for HIT safety reports.
  - Farah Magrabi, Mei-Sing Ong, William Runciman, Enrico Coiera. Using FDA reports to inform a classification for health information technology safety problems. J Am Med Inform Assoc 2012;19:1 45-53 Published Online First: 8 September 2011 doi:10.1136/amiajnl-2011-000369
- 211 problem issues were identified.

Deep Dive™ Overview

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Top 5 Health IT Safety Problems

Classification	#
2.2 System interface issues	33
1.2.1 Wrong input	30
4.4.2 System configuration	27
3.4.1 Wrong record retrieved	23
4.4.1 Functionality	20

Human - Computer

Deep Dive™ Overview

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Events by Health IT Device – ECRI PSO Deep Dive

HIT device	#
Computerized provider order entry (CPOE) System	43
Clinical documentation system	29
Electronic medication administration record (e-MAR)	25
Laboratory Information System (LIS)	22
Pharmacy System	19
Human Interface Device	15
Radiology/diagnostic imaging system (PACS)	13
Automated Dispensing System	3
Clinical decision support (CDS) system	2
Grand Total	**171**

Back to Our Case Study

- Imagine a world in the future where the patient who was registered under her deceased husband's medical record never had such an error.
- Would we accept an error like this from Citibank?

Summary

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- Hazard Manager complements the Common Formats and allows for collection of data systematically across the continuum.
- PSOs with their umbrella of protection can promote sharing of information.
- Unintended HIT-related errors are significant and AHRQ responded with a change in the addition of the AHRQ Common Formats.
- With the updated common formats, tools like hazard manager, and the collection and analytic abilities of PSOs, we hope to see more stories about the improvements in care achieved with HIT.